

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-3 (Canceled)

Claim 4 (Previously Presented) Apparatus for indirectly sensing the temperature of a power MOS device comprising:

- a power MOS device having a current sense circuit for sensing a current in the power MOS device;
- a circuit for producing a voltage related to a drain-source voltage of the power MOS device;
- a comparator coupled to receive at a first input the voltage related to the drain-source voltage of the power MOS device and at a second input a voltage related to the current in the power MOS device;
- the comparator generating an overtemperature protection signal when a predetermined inequality between the voltages at the first and second inputs to the comparator occurs,
- wherein the circuit for producing a voltage related to the drain-source voltage comprises a voltage divider coupled between the drain and source of the power MOS device.

Claim 5 (Previously Presented) The apparatus of claim 4, wherein the power MOS device has a main current cell and a current sense cell, the current sense cell comprising the current sense circuit, and the voltage divider is coupled between the drain and source of the main current cell.

- Claim 6 (Previously Presented) The apparatus of claim 5, wherein the comparator has the first input connected to an output of the voltage divider and the second input coupled to the source of the current sense cell.
- Claim 7 (Previously Presented) The apparatus of claim 4, wherein the voltage divider comprises first and second resistors with an output coupled to the first input of the comparator.
- Claim 8 (Previously Presented) The apparatus of claim 7, wherein the current sense cell is coupled in series with a resistor, the current sense cell and resistor being coupled across the main current cell, a common connection of the current sense cell and the resistor being coupled to the second input of the comparator.
- Claim 9 (Previously Presented) The apparatus of claim 6, wherein the first input to the comparator comprises a non-inverting input and the second input comprises an inverting input.
- Claim 10 (Previously Presented) The apparatus of claim 8, wherein the resistor comprises a precision resistor.
- Claim 11 (Previously Presented) The apparatus of claim 8, further comprising a second comparator coupled across said resistor for providing a signal indicative of a short circuit condition.
- Claims 12-14 (Canceled)
- Claim 15 (Previously Presented) Apparatus for indirectly sensing the temperature of a power MOS device comprising:

a power MOS device having a current sense circuit for sensing the current in the power MOS device;

a voltage divider coupled between the drain and source of the power MOS device;

a comparator coupled to receive at a first input an output of the voltage divider and at a second input a voltage related to the current in the power MOS device;

the comparator generating an overtemperature protection signal when a predetermined inequality between the voltages at the first and second inputs to the comparator occurs.

Claim 16 (Previously Presented) The apparatus of claim 15, wherein the predetermined inequality is that the voltage at the first input of the comparator exceeds the voltage at the second input.

Claim 17 (Previously Presented) The apparatus of claim 15, wherein the power MOS device has a main current cell and a current sense cell, the current sense cell comprising the current sense circuit, and the voltage divider is coupled between the drain and source of the main current cell.

Claim 18 (Previously Presented) The apparatus of claim 17, wherein the comparator has the first input connected to an output of the voltage divider and the second input coupled to the source of the current sense cell.

Claim 19 (Previously Presented) The apparatus of claim 17, wherein the voltage divider comprises first and second resistors with an output coupled to the first input of the comparator.

Claim 20 (Previously Presented) The apparatus of claim 19, wherein the current sense cell is coupled in series with a resistor, the current sense cell and resistor being coupled across the main current cell, a common connection of the current sense cell and the resistor being coupled to the second input of the comparator.

Claim 21 (Previously Presented) The apparatus of claim 20, wherein the resistor comprises a precision resistor.

Claim 22 (Previously Presented) The apparatus of claim 20, further comprising a second comparator coupled across said resistor for providing a signal indicative of a short circuit condition.

Claims 23-33 (Canceled)

Claim 34 (Previously Presented) A method for indirectly sensing the temperature of a power MOS device comprising:

- sensing a first voltage related to the drain-source voltage of the power MOS device;

- sensing a second voltage related to the current in the power MOS device;

- comparing the first and second voltages; and

- generating an overtemperature protection signal when a predetermined inequality between the first and second voltages occurs,

- wherein the step of sensing the first voltage comprises sensing a first voltage from a resistor voltage divider coupled across the drain-source path of the power MOS device.

Claim 35 (Previously Presented) The method of claim 34, further comprising sensing the second voltage by sensing a voltage across a resistor coupled in series with the

current sense cell, the current sense cell and resistor being coupled across a main current cell of the power MOS device..

- Claim 36 (Previously Presented) The method of claim 35, wherein the step of sensing the second voltage comprises sensing the second voltage across a resistor comprising a precision resistor.
- Claim 37 (Previously Presented) The method of claim 35, further comprising comparing the voltage across said resistor for providing a signal indicative of a short circuit condition.
- Claim 38 (Canceled)